# User manual and technical description

# Altura

## Care bed

CE

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Altura
Care bed

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# 1 Symbols

## 1.1 Warning Notices

### 1.1.1 Types of Warning Notices

**Warning notices are differentiated by the type of danger using the following key words:**

- **Caution** indicates potential damage to property.
- **Warning** warns against bodily injury.
- **Danger** warns against potential mortal injury.

### 1.1.2 Structure of Warning Notices

**Signal words**

**Type and source of danger!**

- Measures to avoid the danger.

## 1.2 Other Symbols

### 1.2.1 Instructions

**Structure of instructions:**

- Perform this step.

Results, if necessary.

### 1.2.2 Lists

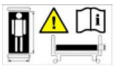
**Structure of bulleted lists:**

- List level 1
  - List level 2

**Structure of numbered lists:**

a. List level 1
b. List level 1
   1. List level 2
   2. List level 2

## 1.3 Symbols and Labels on the Product

| | |
|---|---|
| | Read instructions for use. |
| | Attention - consult accompanying documents. |
| | Thermal protection for transformer |
| | Only suitable for indoor use |
| | Protection against accidents due to electrical current - Type B instruments |
| | Safety isolating transformer, general |
| | CE mark |
| | Jack for attachment of conductor for potential equalisation |
| | Product label |
| | Safe working load |
| | Warning against crushing or trapping |
| | Maximum weight of patient |
|  | Use mattress recommended by manufacturer. |
| | Location of CPR backrest release lever |

# 2 Safety and Dangers

## 2.1 Safety Instructions

- Follow the instructions carefully.
- Only use the bed if it is in perfect working order.
  If necessary, check the bed functions daily or at each shift change.
- Use the bed with the correct mains supply only.
- Ensure that the bed is operated by qualified personnel only.
- Ensure that the patient (health permitting) has been informed about the operation of the bed and all applicable safety instructions.
- Move the bed on even, hard-surfaced floors only.
- Replace any damaged parts immediately with original spare parts only.
- Ensure that maintenance and installation are performed exclusively by qualified personnel who have been trained by the manufacturer.
- Do not apply excess weight or loads to the bed.
- During peak loads or unavoidable excess loads (CPR), place mattress platform in the lowest position.
- Ensure that only one adult patient uses the bed at any time.
- Take care to avoid injuries or squeezing when operating moving parts.
- When using lifting poles or infusion stands, ensure that nothing will be damaged when you move or adjust the bed.
- Brake the castors when the bed is occupied.
- Keep the mattress platform in the lowest position at any time when the healthcare personnel are not treating the patient in order to prevent the patient from falling or injuries.
- Ensure that siderails are operated by healthcare personnel only.
- Never use the bed in areas where there is a hazard of explosion.
- Enable or disable functions on patient controls using the supervisor panel as appropriate for the patient's physical and mental state. Verify that the function is actually disabled.
- Never handle the mains plug with wet hands.
- Remove the mains cable by pulling on the plug only.
- Position the mains cable so that there are no loops or bends in the cable; protect the cable from mechanical wear and tear.
- Improper handling of mains cable can cause an electric shock hazard, other serious injuries or damage the bed.
- Ensure that the stipulated duty cycle (on-time) is not exceeded.
- Ensure that the moving parts of the bed are not blocked.
- To prevent failures, use the manufacturer's original accessories and mattresses only.
- Ensure that the stipulated safe working load is not exceeded.
- If the patient's condition could lead to an entrapment, leave the mattress support platform in the flat position whilst unattended.
- Adjust bed height to approx. 20 cm below maximum height when transporting the bed in order to facilitate overcoming possible obstacles.
- Do not exceed maximum load of 80 kg for mattress platform extension.
- Ensure that the bed and its components are exclusively modified with the manufacturer´s approval.

## 2.2 Conditions of use

The bed may be used and stored in an indoor environment where:

- the temperature range is between + 10 °C and + 40 °C
- the relative humidity is between 30% and 75%
- the atmospheric pressure is between 700 hPa and 1060 hPa

The bed may not be used and stored in an indoor environment:

- where there is a risk of explosion
- containing inflammable anaesthetic

The bed is designed for use in rooms for medical purposes. Electrical installations must therefore meet local norms laying down the necessary conditions for electrical installations.

- ❖ Disconnect the bed from the mains in exceptional cases (i.e. a storm).

## 2.3 Risk Assessment

**Danger**

**Risk of injury or death due to use of incorrect equipment!**

- ❖ Always conduct the risk assessments required for the selection of suitable equipment.

- ❖ Have a qualified clinician or medical provider conduct a risk assessment to ensure maximum safety of the patient.

## 2.4 Specifications of use

Altura is a care bed designed for supporting the patient in several positions such as horizontal, Trendelenburg, Cardiac Chair etc.

### 2.4.1 Correct Use

**The care bed is suitable for:**

- Patients
  - older that 15 years
  - with a weight of up to 165 kg
- Personnel
  - qualified medical staff
  - any person familiar with the manual
  - patient (condition permitting)
- Use
  - standard care
  - uninterrupted operation
- Location
  - nursing homes
  - care facilities

### 2.4.2 Incorrect Use

**The bed is not suitable for:**

- Patients
  - younger than 15 years
- Use
  - intensive care

***NOTE*** *For information concerning uses other than those outlined in the "Correct Use" section above, please contact Linet ®.*

Linet ®'s efforts in research, design and manufacture make sure Linet ® products are of the highest quality and fit for their intended purpose. However, Linet ®can take no responsibility for any damage to the products or any harm to patients, staff or other individuals resulting from:

- Not following the instructions in the manual, including warning notices.
- Using the product for a purpose other than the intended purpose stated in the relevant documentation provided by Linet ® (see Correct Use).

# 3 Standards and Regulations

**The bed complies with the following standards and directives:**

- IEC 60601-1:2005
- IEC 60601-1-2:2007
- IEC 60601-1-6:2010
- IEC 60601-2-52:2009
- ISO 10993-5:2009
- ISO 10993-10:2010
- 93/42/EEC

**The manufacturer adheres to a certified quality management system in compliance with the following standards:**

- ISO 9001: 2008
- ISO 14001: 2004
- EN ISO 13485: 2003

# 4 Scope of Delivery and Bed Variants

## 4.1 Scope of Delivery

**Delivery:**

- Upon receipt, check that the shipment is complete as specified on the delivery note.
- Notify the carrier and supplier about any deficiencies or damages immediately as well as in writing or enter them on the delivery note.

## 4.2 Bed Variants

**Caution**

**Damage to the bed due to incorrect use!**

- Use 125 mm castors only to transport bed without patient.

**Bed features:**

- Mattress platform (type B)
  - steel segments
  - removable plastic parts
- Siderails (Type B)
  - without siderails (Altura Domea, Altura Thema)
  - single collapsible siderails (Altura Domea)
  - full-length aluminium siderails without extensions (Altura Thema)
  - full-length aluminium siderails with extensions (Altura Thema)
- Bed ends (Type B)
  - design F05 - fixed or removable (Altura Domea)
  - design B05, wood - fixed or removable (Altura Domea)
  - design H05 - removable (Altura Thema)
- Castors
  - Tente PJP 125 mm with individual brakes (Altura Domea)
  - Tente PJP 125 mm with central brake (Altura Domea)
  - Tente Motion 125 mm with central brake (Altura Domea, Altura Thema)
  - Tente Motion 125 mm with central brake and 5th castor (Altura Domea, Altura Thema)
  - Tente Motion 125 mm with plastic cover and central brake (Altura Domea, Altura Thema)
  - Tente Motion 125 mm with plastic cover, central brake and 5th castor (Altura Domea, Altura Thema)
- Control elements (Type B)
  - supervisor panel
  - handset
  - foot controls
  - satellite control panel
- Other special features
  - linen shelf
  - mattress platform extension
  - 1 pair of urine bag holders
  - 1 pair of universal accessory rails
  - CPR emergency backrest release
- Colour
  - powder-coated metal and plastic parts RAL 9006 and RAL 9002

# 5 Setup

## 5.1 Transport

**For a safe transport, observe the following:**

- Ensure that no cables are run over when moving a bed.
- Ensure that the mains cable is attached with a hook (at the head end of the bed).
- Ensure that the castors are unlocked before moving the bed during the loading/unloading process (see Castor Control and Bed Transport).
- Move the bed on suitable floor surfaces only.

**Suitable surfaces:**

- Tile
- Hard linoleum
- Poured flooring

**Unsuitable surfaces:**

- Too soft, unsealed or defective flooring
- Soft wooden flooring
- Soft and porous stone floors
- Carpeted floors with underlay
- Soft linoleum
  - For longer distances, ensure that the castor steering function (main control) is activated.
  - Ensure that the brakes are released while moving the bed.

## 5.2 Setup

**Set up the bed as follows:**

- Unpack the bed.
- Check the delivery (see Scope of Delivery and Bed Variants).
- Install equipment and accessories (see Assembly).
- In case of delivery with dismantled bed ends, mount the head and foot ends (see Assembly).
- Set up the bed on a suitable floor surface only (see Transport).
- Ensure that the mains cable does not collide or get stretched when adjusting the bed.
  Check that the plug is inserted correctly.
- Do not leave any extension cords or power strips loose on the floor.
- Ensure that all of the required mechanical and electrical prevention mechanisms are available on site.
- There is no mains switch on the bed, i.e. the mains cable is the only means to isolate the bed from the mains.
  Ensure that the mains cable is always accessible.
- Have the separable plug of the mains cable changed and maintained exclusively by qualified and trained service technicians authorized by the manufacturer.

# 6 Assembly

| | |
|---|---|
| Warning | **Risk of injury when working on the bed!**<br>❖ Ensure that the bed is disconnected from the mains connection prior to assembly, disassembly and maintenance.<br>❖ Ensure that the castors are locked prior to assembly, disassembly and maintenance. |
| Caution | **Damage to the bed due to incorrect assembly!**<br>❖ Ensure that assembly is performed by customer service or trained hospital personnel only. |

Fig. 1 *Overview of Altura Domea*

1. Head end
2. Support for IV pole, lifting pole or extension system
3. Single collapsible siderail
4. Plastic cover for column protection
5. Handset
6. 5th castor
7. Siderail release mechanism
8. Standard castor Tente PJP 125 mm
9. Column
10. Central castor control lever
11. Supervisor panel
12. Foot end

***NOTE*** *For safe, easy handling, Linet ® recommends that two technicians assemble the bed.*

Fig. 2 *Overview of Altura Thema*

1. Head end
2. Handset
3. 5th castor
4. Full-length siderail
5. Linen shelf with supervisor panel
6. Foot end

***NOTE*** *For safe, easy handling, Linet ® recommends that two technicians assemble the bed.*

## 6.1 Bed Ends

Fig. 3 *Locking/unlocking the locking pin*

**Dismount the bed ends as follows:**

- Unlock locking pin.
- Pull out bed end.

**Install the bed ends as follows:**

- Unlock locking pin.
- Put bed end back.
- Unlock locking pin.

## 6.2 Potential Equalisation

The bed is equipped with a standard protective connector. This connector shall be used for potential equalisation between the bed and any intravascular or intracardiac device connected to the patient to protect the patient from static electric shocks.

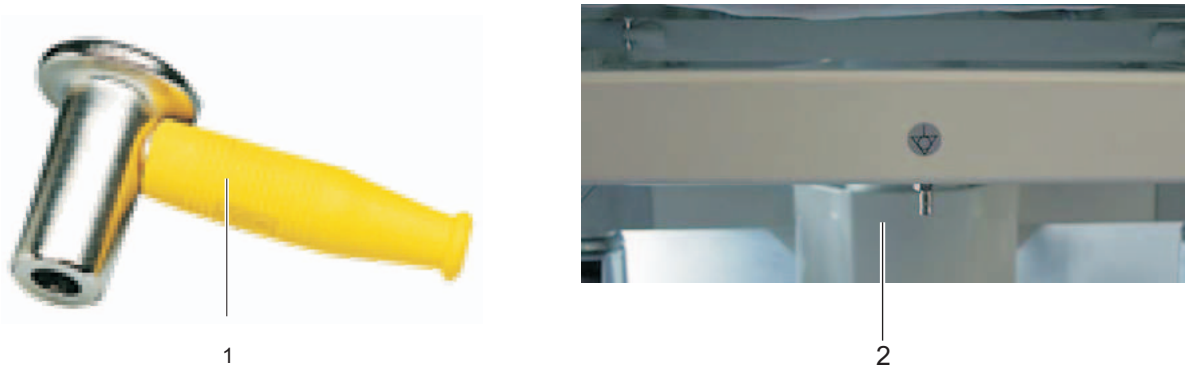



Fig. 4 *Potential Equalisation*

1. Potential equalisation connector - male
2. Potential equalisation connector - female

**Use equalisation connector if:**

- the patient is connected to any intravascular or intracardiac device.

**Before connecting the patient to an intravascular/intracardiac device:**

- Connect the ground wire of the device to the potential equalisation connector **2** on the bed on which the patient in question is lying.
- Use a standard hospital connector **1**.
- Make sure that the connectors match.
- Make sure that there is no possibility for inadvertent disconnection.

**Before moving the bed:**

- Disconnect the patient from the intravascular or intracardiac device.
- Disconnect the potential equalisation connector.

# 7 Operation

## 7.1 Initial Operation

**Prepare the bed for service as follows:**

- Connect the bed to the mains.
- Charge the battery.
- Raise and tilt the mattress platform to the highest position.
- Lower and tilt the mattress platform to the lowest position.
- Check that the castors as well as main brake work correctly.
- Check that the bed extension works correctly.
- Check that the head and foot boards can be removed.
- Check all of the functions on the control elements (Multiboard etc.).
- Check that the siderails function properly.
- Dispose of all packaging (see Disposal).

***NOTE*** *If there is a substantial temperature difference between the bed (due to transport/storage) and the installation site, allow 24 hours for the difference to balance itself before connecting the bed to the mains.*

## 7.2 Battery Operation

The battery supplied with the bed is delivered uncharged. The battery serves as a backup during power failures or while transporting the patient.

***NOTE*** *Batteries will remain in fully functional condition only for a certain period of time which is dictated by the laws of physics and chemistry used in this type of Dry Lead Acid battery technology and their frequency and method of use.*

- The user is obliged to monitor battery functionality and to change the batteries in accordance with the user & service manuals.
- Batteries must be checked according to the user manual at least once per month.

***NOTE*** *Manufacturer provides 6 months warranty for full function of batteries.*

**The manufacturer takes no responsibility for any damage to the bed or battery caused by:**

- Not following manufacturers user manual instructions
- Fitting batteries which are not approved by Linet
- Batteries fitted by an unqualified service organisation.

**To charge the battery:**

- Connect the bed to the mains.

***NOTE*** *Some bed adjustments cannot be carried out without a battery, for example, height adjustment under a load of above 200 kg.*

**The LED indicates the battery's charge status:**

| Yellow LED | Battery status |
|---|---|
| Not lit | Battery capacity is sufficient (charging completed) |
| Short flashing (shortly lit, longer not lit) (circa 1.8 sec.) | Battery is charging - continue charging until the LED is extinguished. In emergency cases, the battery can be used as a backup power source for a short period. If LED is still flashing after 12 hours of charging or stops flashing, but you can not position with bed, battery is defective or broken. Conect manufacturer. |
| Long flashing (longer lit, shortly not lit) (circa 0.2 sec.) | Low battery voltage - battery can not be used as a backup power supply even for a short period; battery is completely discharged or defective ( if this type of signalisation persists, it is necessary to replace the battery - service action) |
| Lit continuously for several hours (circa 10 hours), when bed is connected to the mains. | Battery absence or failure condition (battery is connected incorrectly, line between the power supply and battery is broken or battery fuses are faulty); contact service department of the manufacturer in case of such signalisation |

**Replacing the battery:**

**Caution**

**Damage to the bed due to incorrect battery replacement!**

- Have the battery replaced exclusively by qualified personnel.
- Exclusively use batteries approved by the manufacturer.

**Warning**

**Risk of damage or destruction of battery!**

- If battery is faulty degassing can occur. In rare cases this can cause deformation of the battery packhousing and mains control box.
- If this occurs the bed must be immediately taken out of service and taken to an adequately ventilatedroom without sparks (electricity or fire)!
- Immediately inform service department of the manufacturer!

**Warning**

**Danger of reducing battery durability due to wrong use!**

- Use bed on battery only in crisis situations (e.g.: power blackout, patient complications during transport,etc.)
- After reconnecting bed to the mains charge battery to full capacity (see chart Battery charge status)

- Battery must be replaced with new battery approved by the manufacturer. Replacement must be done by qualified service organisation every 2 years at the latest.
- Bed must only be fitted with batteries approved by the manufacturer. To get more information on how to change battery please refer to the Service manual (contact service department of the manufacturer).

## 7.3 Removing the Bed from Service

**Remove the bed from service as follows:**

- Disconnect the bed from the mains.
- Disconnect the ground wire.
- Deactivate the battery.
- Remove accessories.

**To prevent damage during storage:**

- Pack or cover the bed and accessories.
- Ensure that storage conditions are the same as the operating conditions.

### 7.3.1 Deactivating the Battery

**To avoid damaging the bed and the environment during storage:**

- Deactivate the battery on the supervisor panel.

**To deactivate the battery on the supervisor:**

- Disconnect the bed from the mains.
- Disconnect the ground wire.
- Activate the keypad by pressing the GO button on the supervisor.
- Press the Thigh Rest Up + Thigh Rest Down + Trendelenburg Position buttons at the same time and hold them for three seconds.

The battery is deactivated.

# 8 Manipulation

**Warning**

**Risk of injury when adjusting the bed!**

- Ensure that there are no body parts between the mattress platform elements and the mattress platform frame when adjusting the bed.
- Ensure that there are no body parts below the mattress platform frame before adjusting the bed.
- Secure or remove any items on the bed.

The bed is operated by different control elements.

**Control elements depending on the model:**

- Supervisor
- Handset
- Handset with adapter for easy connection (Plug and Play)
- Handset with illuminated buttons
- Foot control for height adjustment
- Patient control elements integrated in both middle sections of the siderails

Disabling individual functions on the supervisor panel will affect all control elements.

**If the bed does not react to individual position settings:**

- Check whether the function is disabled on the supervisor panel.

## 8.1 Supervisor Panel

The supervisor panel is an optional control element. The supervisor panel can be hung on the foot board or held in the hand while operating the bed.

- When not in use, store the supervisor panel in the built-in linen holder below the foot end (if available).

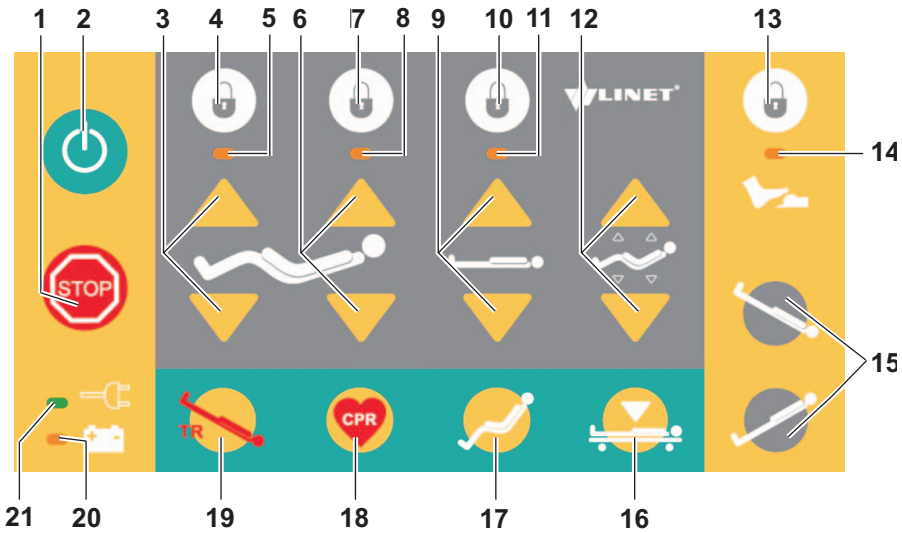



Fig 5 *Supervisor Panel*

1. Central STOP Button
2. Activating GO Button
3. Thighrest Adjustment Button
4. Thighrest Lock Button
5. Thighrest Lock LED
6. Backrest Adjustment Button
7. Backrest Lock Button
8. Backrest Lock LED
9. Height Adjustment Buttons
10. Height Lock Button
11. Height Lock LED
12. Auto-Contour Adjustment Buttons
13. Foot Control Lock Button
14. Foot Control Lock LED
15. Tilt Adjustment Buttons (optional)
16. Extra Low Position Button (bed height below 43 cm)
17. Cardiac Chair Position Button
18. CPR (Resuscitation) Position Button
19. Trendelenburg Position Button (optional)
20. Battery Charge Status LED
21. Mains Power LED

### 8.1.1 Central STOP Button

The central STOP button **1** immediately interrupts all bed movements in case of unauthorized bed positioning or an electronic failure.

When the central STOP button **1** is pressed, the electronic stops all bed movements immediately.

### 8.1.2 Activating GO Button

The GO button **2** activates the keypad or the touchscreens of all control elements.

The GO button **2** is included on a number of different control elements. The function of the GO button **2** is identical on all control elements.

After pressing the GO button **2**, the keypad or touchscreen will remain active for 3 minutes.

**During this time the following is possible:**

- Adjusting individual mattress platform elements by pressing the corresponding function buttons.
- Disabling individual functions with the lock buttons.

Each time a function button is pressed, the keypad will remain active for another 3 minutes.

### 8.1.3 Function Buttons

The function buttons **3**, **6**, **9**, **12** and **15** adjust the position of individual elements as well as the height and tilt of the mattress platform.

***NOTE*** *If you press two function buttons at the same time, the controller will recognise this as an error. The controller immediately interrupts all bed movements.*

**Set the position as follows:**

- Activate the keypad by pressing the GO button **2**.
- Press and hold function button until desired position is reached.

### 8.1.4 Lock Buttons

The lock buttons **4**, **7**, **10** and **13** on the supervisor panel disable individual functions.

**To disable functions:**

- Activate the keypad by pressing the GO button **2**.
- Press the respective lock button.

The respective LED is lit to indicate the lock.

***NOTE*** *The individual functions are locked in the central control panel, the satellite control, the handset, and the siderail control. If the bed is equipped with a foot control, the foot control must be locked separately.*

**To enable disabled functions:**

- Activate the keypad by pressing the GO button **2.**
- Press the respective lock button.

The function is enabled.

### 8.1.5 Position Buttons

Warning

**Risk of injury due to moving parts!**

- Ensure that no body parts are trapped between moving parts of bed and mattress platform.
- Ensure that no persons or body parts are close to the bed or the accessories (e.g. infusion stand, lifting pole) when the mattress platform is moving.

Caution

**Damage to property due to moving parts!**

- Ensure that no objects (e.g. cables) are trapped between moving parts of bed and mattress platform.
- Ensure that no objects are close to the bed or the accessories (e.g. infusion stand, lifting pole) when the mattress platform is moving.

The therapeutic and safety-related positions are preprogrammed. When a position is set, several parts of bed and mattress platform move simultaneusly.

**You can set the programmed positions with the following buttons:**

- Cardiac Chair Position (pre-programmed) **17**
- CPR (Resuscitation) Position (pre-programmed) **18**

Set the position as follows:

- Activate the keypad by pressing the GO button **2**.
- Press and hold the function button until the desired position is reached.

**Cardiac Chair Position**

The cardiac chair position is for patients with cardiac arrhythmia and breathing difficulties.

**Settings after pressing position button 17:**

- The foot of the mattress platform is tilted to the lowest position.
- The backrest and thighrest are moved to the upright position.

You can disable this function. If individual functions (for example, thighrest adjustment) are disabled, they are not performed.

**CPR (Resuscitation) Position**

The CPR position is for resuscitating the patient in an emergency.

**Settings after pressing position button 18:**

- The mattress platform is moved to the horizontal position.

***NOTE*** *All mattress platform elements must be retracted to their lowest position by function buttons.*

***NOTE*** *For rapid mechanical positioning see CPR Backrest Release.*

## 8.2 Handset

A handset is included with the bed as an optional feature. The position of the handset depends on the patient's condition. The handset is available with and without button illumination. The button illumination of the illuminated handset is active when the bed is connected to the mains. The functions of both handsets are identical.

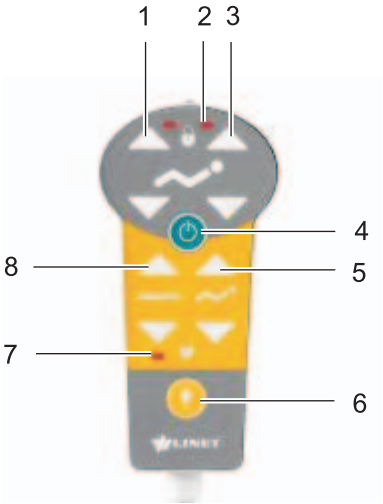



Fig. 6 *Handset*

1. Buttons Thigh Rest Position
2. LED Thigh Rest/Backrest Lock
3. Button Backrest Position
4. GO Button
5. Button Autocontour
6. Button Flashlight
7. LED Height Lock
8. Buttons Height Adjustment

**To switch on the flashlight:**

- Press flashlight button **6**.

**Set the position as follows:**

- Activate the keypad by pressing the GO button.
- Press and hold function button until desired position is reached.

***NOTE*** *The nursing staff must decide whether the patient can adjust the bed.*

**If the patient's condition requires it, preventing the patient from adjusting the bed is possible by:**

- Disabling functions.

***NOTE*** *An adapter for the handset is available. The adapter enables quick mounting and dismounting (e.g. replacing a defective handset, using the handset for another bed).*

## 8.3 Satellite Panel

The satellite panel is optional. The satellite panel is attached to the backrest with a flexible arm.

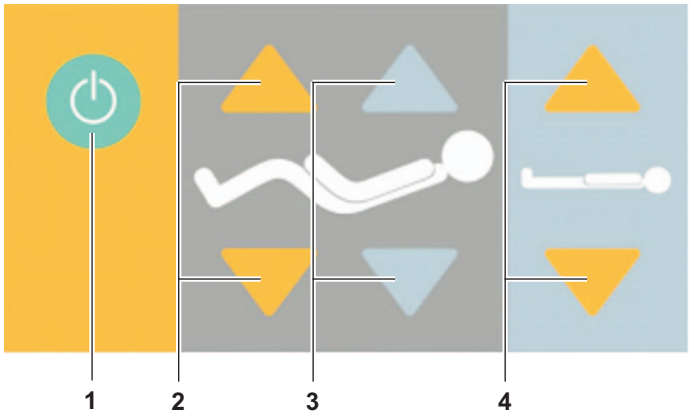



Fig 7 *Satellite Panel*

1. GO Button
2. Thighrest Adjustment Button
3. Backrest Adjustment Button
4. Height Adjustment Buttons

**Set the position as follows:**

- Activate the keypad by pressing the GO button.
- Press and hold the function button until the desired position is reached.

***NOTE*** *The nursing staff must decide whether the patient can adjust the bed.*

**If the patient's condition requires it, you can prevent the patient from adjusting the bed by:**

- Moving the satellite panel out of the patient's reach.

Or

- Disabling functions.

***NOTE*** *The satellite panel can be fixed on the right or left side of the bed.*

## 8.4 Foot Control Bed Height

The foot control is optional and allows setting the height of the bed using one's feet.

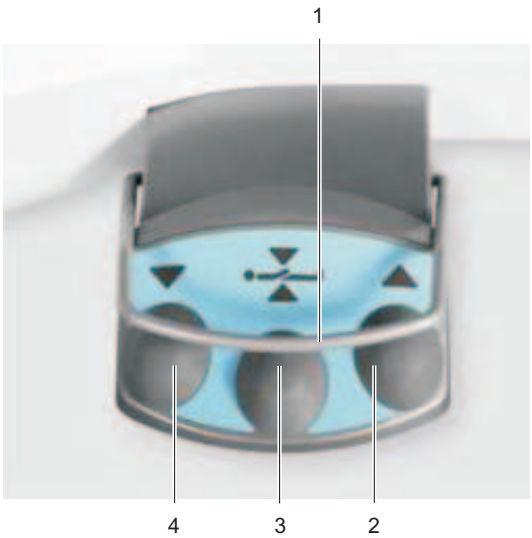



Fig. 8 *Foot Control Bed Height*

1. Protection Frame against Unwanted Activation
2. Foot Switch Raise Mattress Platform
3. Foot Switch Examination Position
4. Foot Switch Lower Mattress Platform

**Set the position as follows:**

- Press and hold foot switch until desired position is reached.

## 8.5 CPR Backrest Release

**Warning**

**Lowering the backrest too quickly can injure the patient!**

- Ensure that the siderails are in the lowest position.
- Ensure that there are no body parts between the siderails and the backrest.
- Press the backrest down using the mattress guard handle only.

The bed permits quick, mechanical lowering of the backrest for emergency resuscitation (CPR) procedures.

Fig. 9 *CPR emergency backrest release*

## 8.6 Siderails

Full-length or single collapsible siderails are components of the bed. The nursing personnel are responsible for the siderails being folded up while the patient is in bed.

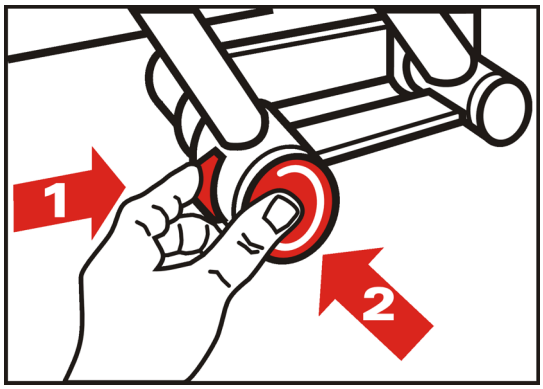



Fig. 10 *Mechanism Single Collapsible Siderail*

**To fold siderails up/down:**

- Grip the siderail by the upper tube.
- Press both locking buttons to unlock.
- Push siderail towards foot end.
- Fold siderail up or down.
- Push siderail towards head end.

Siderail latches automatically with a click.

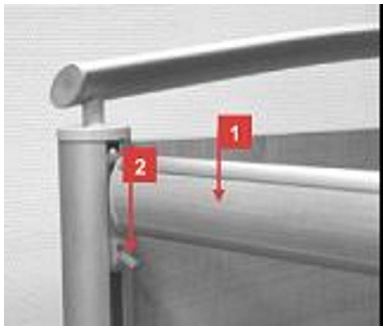



Fig. 11 *Mechanism Full-Length Siderail*

**To fold siderails up/down:**

- Grip the siderail by the upper tube in marked place **1** and lift slightly
- Press down locking pin **2** to unlock.
- Fold siderail up or down.

When folded up, siderail locks automatically with a click.

## 8.7 Castor Control and Bed Transport

**Caution**

**Damage to property due to incorrect transport and involuntary movement!**

- Prior to transport, ensure that the bed is disconnected from the mains.
- Ensure that the castors are locked prior to assembly, disassembly and maintenance.
- Ensure that the castors are locked when the bed is occupied.
- Hang the mains cable on the appropriate hook on the bed during transport.
- Have the bed transported exclusively by nursing personnel and by at least 2 persons.

**Castor control for bed with control levers**

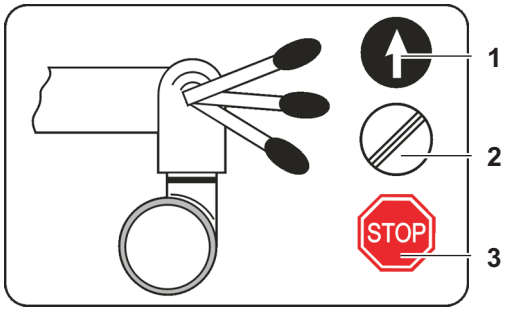



Fig. 12 *Positions of Castor Control Lever*

The control levers are located on both sides of the foot end.

**Castor control lever positions:**

1. Forward Movement
   The front left castor is locked. The bed moves straight ahead. If the bed is equipped with a fifth castor, this castor determines the direction of movement.
2. Unrestricted Movement
   All of the castors are unlocked.
3. Braked
   All of the castors are braked.

**Castor control for bed without control levers**

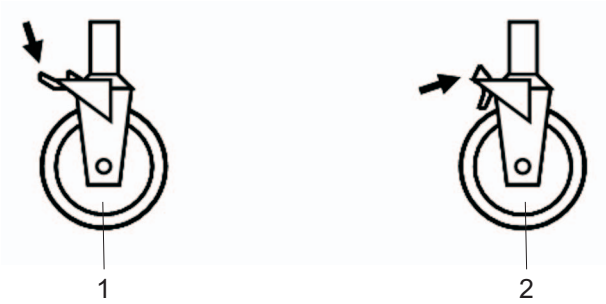



Fig. 13 *Positions of Castor Control Lever*

Every individual castor has its own brake.

- To brake a castor, push brake down with foot.
- To release brake, push brake up with foot.

**Transporting the bed:**

- Adjust bed height to at least 20 cm below maximum height.
- Push bed by handles on head or foot end.

## 8.8 Accessories

**Warning**

**The use of incompatible accessories can injure the patient!**

- Use original accessories from the manufacturer only.

***NOTE*** *The manufacturer is not responsible for the use of unapproved accessories.*

***NOTE*** *All accessories meet the requirements of IEC 60601-2-52:2009.*

### 8.8.1 Mattress

**Altura is designed for the following standard mattress sizes:**

- 200 cm x 86 cm x 14 cm
- 200 cm x 86 cm x 20 cm

- Place the mattress exactly in the middle of the mattress platform.

### 8.8.2 Lifting Pole

Fig 14 *Bushing for lifting pole and infusion stand*

**Lifting pole variants:**

- Lifting pole for beds with fixed bed end
- Lifting pole for beds without fixed bed end

**To ensure safe use of the lifting pole:**

- Never exceed the maximum load of 75 kg.
- Never use the lifting pole for rehabilitation exercises.
- To prevent the bed from tipping over, ensure that the lifting pole does not project out from the bed.

**Lifting pole positions:**

- Over the backrest (working position).
- Parallel to the head board.

**To install the lifting pole:**

Fig 15 *Safety pin, locked in place*

- Insert the lifting pole in the corresponding bushings at the head of the bed (corners).
- Ensure that the safety pin locks into place.

A plastic grab handle with an adjustable strap is attached to the lifting pole.

***NOTE*** *The date of manufacture is marked on the grab handle. Linet ® recommends that you replace the plastic grab handle every four years.*

### 8.8.3 Infusion Stands

It is possible to insert infusion stands into the sleeve fittings or the multifunctional accessory adapters at the head end.

- Use exclusively infusion stands with four hooks for hanging IV bags or for hanging a basket for intravenous solutions.
- Ensure that the weight-bearing capacity of the infusion stand and the four hooks is not exceeded.
  The maximum weight-bearing capacity per hook is 2 kg.

### 8.8.4 Accessory rails

Fig. 16 *Accessory Rail*

**Load capacity:**

- Maximum load of 5 kg without leverage
- Maximum load of hook pair 10 kg

**Accessories for hanging on the accessory rail:**

- Urine bag holder
- Urine bottle basket
- Cannula holders
- Stainless steel rails

# 9 Cleaning/Disinfection

**Warning**

**Risk of injury due to accidental bed movement!**

- Always disable the function buttons when cleaning between the undercarriage and mattress platform.

**Caution**

**Incorrect cleaning/disinfection can damage the bed!**

- Do not use washing machines.
- Do not use pressure or steam cleaners.
- Use the recommended cleaning agents only.
- Follow the instructions and observe the dosages recommended by the manufacturer.
- Ensure that disinfectants are selected and applied by qualified hygiene experts only.

**For safe and gentle cleaning:**

- Disconnect the bed from the mains.
- Do not use any strong acids or bases (optimum pH range 6 - 8).
- Only use detergents that are suitable for cleaning medical equipment.
- Do not use abrasive powders, steel wool, or other material and cleaning agents that might damage the finish.
- Never use any corrosive or caustic detergents.
- Never use detergents that deposit calcium carbonate.
- Never use detergents with solvents that might affect the structure and consistency of the plastics (benzene, toluene, acetone, etc.).
- Clean the bed with a well-wrung, damp cloth.
- Clean electrical components carefully and allow them to dry sufficiently.

Linet ® recommends the following cleaning agents

| Cleaning agents | Manufacturer |
|---|---|
| Terralin, Mikrozid, Thermosept | Schülke & Mayr |
| Bacillol Plus, Bacillocid Rasant, Mikrobac Forte, Dismozon Pur | BODE Chemie |
| Lysoformin 3000, Lysoform Killavon | LYSOFORM |
| Incidin plus, Incidin rapid | Ecolab |
| Perform | Schülke |

## 9.1 Preparing for Cleaning

**Prepare for cleaning as follows:**

- Put the mattress platform in the highest position.
- Adjust the back and thigh rests so that the reverse sides are accessible.
- Disable the function buttons on the control elements using the supervisor panel.
- Disable the foot controls using the supervisor panel.
- Disconnect the bed from the mains.
- Move the bed to the location where it will be cleaned.
- Lock the brakes on the bed.

## 9.2 Cleaning

### 9.2.1 Daily Cleaning

**Clean the following bed parts:**

- All of the control elements for adjusting the bed
- All handles
  - Backrest and calf rest handles
  - CPR release handle
- Head and foot boards
- Siderails (in highest position)
- Freely accessible mattress surface
- Accessory rails

### 9.2.2 Cleaning before Changing Patients

**Clean the following bed parts:**

- All of the control elements for adjusting the bed
- All handles
  - Backrest and calf rest handles
  - CPR release handle
- Head and foot boards
- Siderails (in highest position)
- Freely accessible mattress surface
- Accessory rails
- All plastic mattress platform covers
- Plastic undercarriage covers
- Telescopic columns
- Mattress on all sides
- Freely accessible metal parts of mattress platform
- Cable ducts
- Lifting pole bushing
- Infusion stand bushing
- Wall deflection bumpers
- Castors
- Brakes

### 9.2.3 Complete Cleaning and Disinfection

**Clean the following bed parts:**

- All of the control elements for adjusting the bed
- All handles
  - Backrest and calf rest handles
  - CPR release handle
- Head and foot boards
- Siderails (in highest position)
- Freely accessible mattress surface
- Accessory rails
- All plastic mattress platform covers
- Plastic undercarriage covers
- Telescopic columns
- Mattress on all sides
- Freely accessible metal parts of mattress platform
- Cable ducts
- Lifting pole bushing
- Infusion stand bushing
- Wall deflection bumpers
- Castors
- Brakes
- Interior parts
  (accessible after removing mattress platform covers)

# 10 Troubleshooting

| Error/Fault | Cause | Solution |
|---|---|---|
| The bed cannot be adjusted with the position buttons | GO button was not pressed | Press the GO button. |
| | Function disabled on supervisor panel | Enable disabled function. |
| | Drive motors have no power, Defective drive motors, Defective battery | Check the mains connection. Notify the service department. |
| | Plug inserted incorrectly | Insert the mains plug correctly. |
| | Faulty power source. | Notify the service department. |
| | Faulty control element | Notify the service department. |
| Faulty mattress platform height/tilt adjustment | There is an object on the undercarriage cover | Remove the object. |
| | Function disabled on supervisor panel | Enable disabled function. |
| | Drive motors have no power, Defective drive motors, Defective battery | Check the mains connection. Notify the service department. |
| | Plug inserted incorrectly | Insert the mains plug correctly. |
| | Faulty power source | Notify the service department. |
| | Faulty control element | Notify the service department. |
| Backrest cannot be lowered from the upright position | There is an object under the backrest or in the drive mechanism | Remove the object. |
| | Locking handle is defective | Notify the service department. |
| The siderails cannot be adjusted | The siderail lock is dirty | Clean the locking mechanism. |
| | Locking handle is defective | Notify the service department. |
| Faulty brakes | Dirt blocking brakes mechanically | Clean the brake system. |
| | The brake mechanism is defective | Notify the service department. |
| Inserting head or foot board is not possible | Wrong position of head or foot board | Check locking mechanism. Position head or foot board correctly. |
| | Defective mechanism | Notify the service department. |

**Danger**

**Risk of mortal injury due to electric shock!**

- If a fault occurs, have the electric motor, power box or other electrical parts repaired by qualified personnel exclusively.
- Do not open the protective covers of the electric motor or the power box.

# 11 Maintenance

Warning

**Risk of injury when working on the bed!**

- Ensure that the bed is disconnected from the mains connection prior to assembly, disassembly and maintenance.
- Ensure that the castors are locked prior to assembly, disassembly and maintenance.

Warning

**A defective bed can cause injuries!**

- Have a defective bed repaired immediately.
- If the defect cannot be repaired, do not use the bed.

Caution

**Incorrect maintenance can damage the bed!**

- Ensure that maintenance is performed by customer service or trained hospital technicians only.
- Do not use the bed any malfunction or defect occurs. In this case contact manufacturer or service organisation immediately.

***NOTE*** *Linet ® recommends that you attach the maintenance plaque to the bed.*

- Ensure that the following maintenance work is performed every 12 months by the manufacturer or by a qualified service organisation trained and certified by the manufacturer

## 11.1 Monthly maintenance

- Check all movable parts for wear.

## 11.2 Maintenance every 3 months

- Check function of brake lever.
- Clean the piston shafts and lubricate with silicone oil.
- Clean the bolts and hinges of the mattress platform (backrest, thigh rest, calf rest) and lubricate with silicone oil.
- Check mechanism of mattress platform extension.
- Check bolts on castors and tighten them if necessary.

## 11.3 Maintenance every 12 months

### 11.3.1 Spare Parts

The product label is located on the inside of the longitudinal rail of the mattress platform frame. The product label contains information for claims and ordering replacement parts.

**Information about spare parts is available from:**

- Customer service
- Sales
- Our technical support department

### 11.3.2 Completeness

- Perform a visual check (with delivery note if necessary).
- Have any missing parts replaced.

### 11.3.3 Wear

- Check all bolts and tighten if necessary.
- Check all locking mechanisms.
- Check the bed for wear, scratches or rub marks.
- Eliminate the cause if necessary.
- Have any defective parts replaced.

### 11.3.4 Functioning

- Check that all bed adjustments reach the maximum position.
- If necessary, clean, lubricate or replace any worn spots and parts.

### 11.3.5 Electric Control

**Plug connections:**

- Replace O-rings on connectors.
- Check plug connections for dirt and defects.
- Clean or replace if necessary.
- Check that the plug connectors are properly seated.

**Motors:**

- Check motor movement (adjust bed positions).
  Check for incorrect and interrupted movements.
- Have defective motors replaced if necessary.
- Check cables for signs of wear and entanglement.
- Install a new cable or have it replaced if necessary.

**Battery:**

- Check that the battery is working properly (disconnect the bed from the mains) every 2 months.
- Have the battery replaced if necessary.

### 11.3.6 Castors

- Clean the castors completely.
- Grease the castors if necessary.
  Use Caro EP 2 by DEA or an equivalent grease
- Check that the castors work properly.
  - Forward Movement
  - Unrestricted Movement
  - Braked
- Have the brakes adjusted if necessary.
- Have any defective castors replaced.

### 11.3.7 Accessories

- Check that all accessories (for example, lifting pole, siderails, infusion stand, etc.) are working properly.
- Replace if necessary.

## 11.4 Safety Checks

**Warning**

**Incorrect safety checks can cause injuries!**

- Ensure that safety checks are performed by customer service or authorised personnel (certified by the manufacturer) only.
- Ensure that the safety checks are recorded in the service and maintenance log.

**Warning**

**A defective bed can cause injuries!**

- Have a defective bed repaired immediately.
- If the defect cannot be repaired, do not continue to use the bed.

In accordance with §6 of the Medical Devices Operator Ordinance, the operator is required to perform a technical safety check on the hospital bed every 12 months.

The procedure for performing the safety check is stipulated in VDE 0751 or IEC 601.1.

The manufacturer will give a certificate to service organisations in which the manufacturer declares that the service organisation is qualified to perform maintanance on Linet ® products.

Linet ® makes every resonable effort within research, design and manufacturing of beds to ensure that their products are fit for purpose and producd to the highest level of quality. However Linet ® can take no responsibility for any damage caused to the product or harm to patients, staff or other individuals as a result of:

- Not following the instructions for use, including warning and caution statements, provided in their user manuals,
- Use of the product for other than its intended purpose as stated in any documentation provided by Linet ®

***NOTE*** *On request, the manufacturer will provide circuit diagrams, component part lists, descriptions, calibration instructions etc. for service personnel for the repair of ME equipment designated by the manufacturer as repairably by service personnel.*

# 12 Disposal

## 12.1 Environment Protection

Linet ® is aware of the important role that the protection of our environment plays for future generations.

The materials of this product are environmentally compatible. It does not contain hazardous substances on the basis of cadmium, mercury, asbestos, PCB or CFC. The noise emission and the vibrations meet the directives for premises. None of the wooden parts are made of tropical woods (for example, mahogany, jacaranda, ebony, teak, etc.) or of woods from the Amazonian region or similar rainforests.

The packaging materials are produced according to the respective directives. Dispose of the packaging material according to the symbols and by delivering it to an authorised person.

The product consists of recyclable steel, plastic and electronic components.

## 12.2 Disposal

### 12.2.1 Within Europe

**To dispose of the appliance:**

- When you dispose of your appliance do not put it into the household waste.
- Send the appliance to the recycling of electrical appliances.

The materials of the appliance are reusable. By reusing, material recycling or other forms of use of old appliances you give an important contribution to the protection of our enviroment.

Ask the responsible environmental protection authorities for the appropriate disposal point.

### 12.2.2 Outside Europe

- Dispose of the bed or its components in accordance with local laws and regulations:
  - After using the bed
  - Following maintenance and installation work
- Hire an approved waste disposal company for disposal.

# 13 Warranty

Linet ® will only be held responsible for the safety and reliability of products that are regularly serviced and used in accordance with the safety guidelines.

**Should a serious defect arise that cannot be repaired during maintenance:**

- Stop using the bed.

This product is covered by a 24-month warranty from the date of purchase. The warranty covers all material and manufacturing-related failures and errors. Failures and errors caused by incorrect use and external effects are not covered. Justified complaints will be fixed free of charge during the warranty period. Proof of purchase, with the date of purchase, is required for all warranty service. Our standard terms and conditions apply.

# 14 EC Declaration of Conformity

## EC CONFORMITY DECLARATION

**Date of issue: 5. 12. 2011**

**Conformity declaration issued by:**

| | |
|---|---|
| Commercial name | **Linet spol. s r. o.** |
| Registered address | Želevčice 5, 274 01 Slaný, Czech Republic |
| Reg. No. | 00507814 |
| Telephone | +420 312 576 111 |
| Fax | +420 312 522 668 |

| | |
|---|---|
| As the producer of the product - name (brand): | **Altura Thema /Altura Domea** |
| Variants of the product: | **1SMB / 1SMD**<br>(Variants are specified in the technical documentation of the product). |
| Description and function designation: | Electrically operated hospital and nursing bed intended for use in the standard care, acute care (only Altura Thema), long-term care and/or nursing care, including all applicable accessories. |
| Classification of the product as the medical device: | **Class I** nonsterile, without measuring function |

**A) Declaration**

I declare that the said product is safe under the conditions of common use in compliance with the instructions and that measures have been taken to ensure the conformity of all the products brought to market with basic requirements of directives related therefore, stated in paragraph B.

**B) Fulfilled technical requirements**

This product's characteristics comply with the technical parameters related to it and stated in MDD 93/42/EEC as amended, which stipulates the technical parameters for healthcare products, in directive 2004/108/ES as amended which stipulates the technical parameters of products concerning their electromagnetic compatibility and directive 2006/42EC as amended which stipulates the technical parameters for machinery device.

**C) Means of assessing conformity**

Conformity was assessed by the procedure stated in MDD 93/42/EEC, Annex VII.

**D) Used standards**

The said product fulfils the requirements of these harmonized technical standards which were used for assessing of conformity: EN 60601-1:2005, EN 60601-1-2:2007, EN 60601-1-6:2010; EN 60601-2-52:2010, EN 14971:2007

Ing. Zbyněk Frolík
managing director

# 15 Technical Specifications

## 15.1 Mechanical Specifications

| | |
|---|---|
| Dimensions<br>With full-length siderail (Altura Thema)<br>With single collapsible siderail (Altura Domea) | <br>218.9 cm x 102.5 cm<br>218.5 cm x 98.3 cm (siderail length: 166.5) |
| Mattress platform dimensions (mattress)<br>standard | <br>200 cm x 86 cm |
| Max. mattress height<br>For full-length siderail (Altura Thema)<br>For single collapsible siderail (Altura Domea) | <br>20 cm<br>standard: 14 cm<br>with extender: 24 cm |
| Siderail height over mattress platform (without mattress)<br>With full-length siderail (Altura Thema)<br>With single collapsible siderail (Altura Domea) | <br>42 cm<br>36 cm |
| Mattress platform extension<br>With full-length siderail (Altura Thema)<br>With single collapsible siderail (Altura Domea) | <br>+15 cm<br>+15 cm |
| Mattress platform height adjustment | 38.5 cm ± 0.5 cm<br>- 76.5 cm ± 0.5 cm |
| Maximum backrest angle | 70° |
| Auto-regression (length compensation) of backrest | 11 cm |
| Maximum calf rest angle | 35° |
| Trendelenburg/Anti-Trendelenburg position | +16°/-16° |
| Weight (depending on equipment) | 140 kg |
| Safe working load (including mattress and accessories)<br>With battery<br>Without battery | <br>230 kg<br>180 kg |
| Max. weight<br>Patient<br>Accessories<br>Mattress | <br>165 kg<br>45 kg<br>20 kg |
| Max. Lifting Pole Load | 75 kg |
| Environmental conditions<br>■ Temperature<br>■ Humidity<br>■ Atmospheric Pressure | <br>+10 °C — +40 °C<br>30 — 75 %<br>700 — 1060 hPa |

## 15.2 Electrical Specifications

| | |
|---|---|
| Input Voltage | 230 VAC, +/- 10%, 50 — 60 Hz |
| Maximum Power Input | max. 1.6 A, 370 VA |
| DIN EN 60529 Safety Protection | IP 54 |
| Safety Class<br>Applied parts | Class I<br>Type B |
| Electrical Motor Operating Time | 10%, max. 2 min out of 18 min |

***NOTE*** *Upon request, Linet ® can deliver hospital beds with electrical specifications that comply with regional standards (custom voltage, different mains plugs).*

**Danger**

**Danger to life due to electric shock!**

- Ensure that maintenance and service of electrical parts are performed only by qualified personnel if the bed is connected.

## 15.3 EMC

No special precautions regarding EMC are required for the equipment.

**Warning**

**RF communication equipment can affect bed functions!**

- Do not use portable and mobile RF communication equipment near the bed.

## 15.4 PB 43 Electronic System of Altura

Altura requires special preliminary measures pertaining to EMC that necessitate installation and commissioning in conformity with the EMC information given in this Manual.

**Warning**

**Increased electromagnetic radiation or reduced electromagnetic resistance due to unsuitable accessories, converters or cables!**

- Consult Linet ® or local dealer before using other parts than those provided by Linet ®.

**Warning**

**Damage to property due to electromagnetic radiation!**

- Do not use electrical equipment near the bed.

Altura is intended for the application in electromagnetic environment as specified below. The customer or user of the bed is responsible for the fact that these requirements are met.

### 15.4.1 Manufacturer's Manual and Declaration - Electromagnetic Radiation

| Radiation Test | Conformity | Electromagnetic Environment |
|---|---|---|
| High-frequency radiation<br>CISPR 11 | Group 1 | Altura utilizes high-frequency energy for its internal function only. The high-frequency radiations are very low and unlikely to cause any interference to nearby electronic devices. |
| High-frequency radiation<br>CISPR 11 | Class B | Altura is suitable for all institutions, including households and objects directly connected to the public low-voltage mains supplying residential buildings. |
| Harmonic radiations<br>IEC 61000-3-2 | Class A | |
| Fluctuating voltage/Flashing radiation<br>EC 61000-3-3 | Satisfactory | |

### 15.4.2 Manufacturer's Manual and Declaration - Electromagnetic Resistance

| Resistance Test | Test Level as per IEC 60601 | Level of Compliance | Electromagnetic Environment |
|---|---|---|---|
| Electrostatic discharge (ESD)<br>IEC 61000-4-2 | ± 6 kV for contact<br>± 8 kV for air | ± 6 kV for contact<br>± 8 kV for air | ❖ Ensure that the following requirements are met:<br>Floors: wood, concrete or ceramic tiles<br>Relative humidity: >30% |
| Electrical fast transient response/ group of impulses<br>IEC 61000-4-4 | ± 2 kV in feeder line<br>± 1 kV in input/output line | ± 2 kV in feeder line<br>± 1 kV in input/output line | ❖ Ensure that mains quality is suitable for commercial or hospital environment. |
| Shock pulse<br>IEC 61000-4-5 | ± 1 kV between lines<br>± 2 kV between line (lines) and earth | ± 1 kV in differential mode<br>± 2 kV in co-phasal mode | ❖ Ensure that mains quality is suitable for commercial or hospital environment. |
| Short-time voltage drop, short-duration interruptions and slow voltage changes on the feeder input line<br>IEC 61000-4-11 | <5 % $U_T$<br>(>95 % short-duration drop of $U_T$)<br>within 0.5 cycles<br><br>40 % $U_T$<br>(60 % short-duration drop of $U_T$)<br>within 5 cycles<br><br>70 % $U_T$<br>(30 % short-duration drop of $U_T$)<br>within 25 cycles<br><br><5 % $U_T$<br>(>95 % short-duration drop of $U_T$)<br>within 5 s | <5 % $U_T$<br>(>95 % short-duration drop of $U_T$)<br>within 0.5 cycles<br><br>40 % $U_T$<br>(60 % short-duration drop of $U_T$)<br>within 5 cycles<br><br>70 % $U_T$<br>(30 % short-duration drop of $U_T$)<br>within 25 cycles<br><br><5 % $U_T$<br>(>95 % short-duration drop of $U_T$)<br>within 5 s | ❖ Ensure that mains quality is suitable for commercial or hospital environments.<br>❖ For permanent operation during a power failure, connect the bed to a power generator since the back-up battery's capacity is limited. |
| Magnetic field of network frequency (50/60 Hz)<br>IEC 61000-4-8 | 3 A/m | 3 A/m | ❖ Ensure that the magnetic fields of the network frequency conform to the normal levels of commercial or hospital environments. |

***NOTE*** *$U_T$ refers to the AC mains voltage before the test level is applied.*

| Resistance Test | Test Level as per IEC 60601 | Level of Compliance | Electromagnetic Environment |
|---|---|---|---|
| Conducted high-frequency phenomena<br>IEC 61000-4-6 | 3 $V_{rms}$<br>150 kHz to 80 MHz | 3 $V_{rms}$ | ❖ Do not use portable and mobile HF communication equipment near the bed.<br>❖ Observe the distances indicated below. |
| Radiated high-frequency phenomena<br>IEC 61000-4-3 | 3 V/m<br>80 MHz to 2.5 GHz | 3 V/m | Recommended distances:<br>$d = 1.2 \sqrt{P}$<br>$d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz<br>$d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz<br><br>P is the rated maximum output power of the transmitter in Watts (W) defined by the transmitter's manufacturer.<br>d is the recommended separating distance in metres (m).<br><br>❖ Ensure that the field intensities of permanent HF transmitters determined by the summary of electromagnetic characteristics for the given place [a] do not exceed the satisfactory level [b] in each frequency range.<br>Interferences are possible in the vicinity of the instrument marked with the following symbol: |

[a] It is not possible to accurately indicate field intensities from permanent transmitters (e.g. radio base stations of the radio, phones and ground mobile and amateur radio stations, AM and FM radio and television broadcasting). To assess the electromagnetic environment for permanent HF transmitters, take into account the on-site electromagnetic characteristics.
If the measured field intensity is higher than the pertinent satisfactory HF level stated above, observe whether the bed is functioning normally.
If any abnormal properties are observed, move or relocate the bed.
[b] The field intensity in the entire frequency range from 150 kHz to 80 MHz should be lower than 3 V/m.

***NOTE*** *With 80 MHz and 800 MHz, the higher frequency range is applicable.*

***NOTE*** *The absorption and reflection of buildings, objects and people will influence electromagnetic propagation.*

# 16 Log

## 16.1 Delivery Log

| | |
|---|---|
| Order Number: | |
| Customer: | |
| Model Number: | |
| Serial Number: | |
| Delivery Date: | |
| Delivered By: | |

I hereby confirm that the personnel has been familiarised with the correct operation of the bed.

Date:

_____

Customer's Signature and Seal:

_____

Supplier's Signature and Seal:

_____

## 16.2 Service and Maintenance Log

| Description of Service | Date | Performed By |
|---|---|---|
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